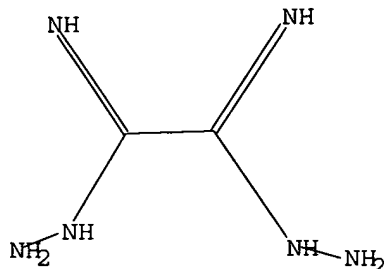


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Uploading C:\Program Files\Stnexp\Queries\09813826a.str

L1 STRUCTURE UPLOADED

=> d
L1 HAS NO ANSWERS
L1 STR



Structure attributes must be viewed using STN Express query preparation.

=> s l1
SAMPLE SEARCH INITIATED 12:49:15 FILE 'REGISTRY'
SAMPLE SCREEN SEARCH COMPLETED - 18 TO ITERATE

100.0% PROCESSED 18 ITERATIONS 5 ANSWERS
SEARCH TIME: 00.00.01

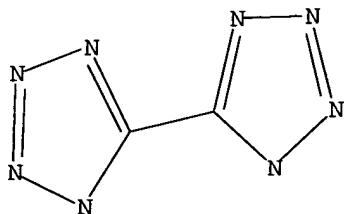
FULL FILE PROJECTIONS: ONLINE **COMPLETE**
 BATCH **COMPLETE**
PROJECTED ITERATIONS: 106 TO 614
PROJECTED ANSWERS: 5 TO 234

L2 5 SEA SSS SAM L1

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L3 STRUCTURE UPLOADED

=> d
L3 HAS NO ANSWERS
L3 STR



Structure attributes must be viewed using STN Express query preparation.

=> File Caplus
COST IN U.S. DOLLARS
FULL ESTIMATED COST

SINCE FILE	TOTAL
ENTRY	SESSION
2.70	2.91

FILE 'CAPLUS' ENTERED AT 12:49:56 ON 19 MAR 2005
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FILE COVERS 1907 - 19 Mar 2005 VOL 142 ISS 13
FILE LAST UPDATED: 18 Mar 2005 (20050318/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> s l3 full

REGISTRY INITIATED

Substance data SEARCH and crossover from CAS REGISTRY in progress...
Use DISPLAY HITSTR (or FHITSTR) to directly view retrieved structures.

FULL SEARCH INITIATED 12:50:46 FILE 'REGISTRY'
FULL SCREEN SEARCH COMPLETED - 136 TO ITERATE

100.0% PROCESSED 136 ITERATIONS 83 ANSWERS
SEARCH TIME: 00.00.02

L8 83 SEA SSS FUL L3

L9 157 L8

=> s l9 and dicyan?

31103 DICYAN?

L14 22 L9 AND DICYAN?

=> s l14 and ?zide?

116240 ?ZIDE?

L15 16 L14 AND ?ZIDE?

=> d l15 1-8 ibib abs hitstr

L15 ANSWER 1 OF 16 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2003:266730 CAPLUS

DOCUMENT NUMBER: 138:387647

TITLE: Environmentally acceptable short-flame and flameless aerosol-forming compositions for fire extinguishing
INVENTOR(S): Perepechenko, B. P.; Solov'ev, V. A.; Korobenina, T. P.; Pak, Z. P.; Golubev, A. D.; Rusanov, V. D.;

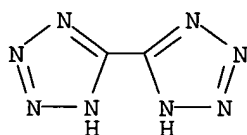
Sokol'nikov, A. S.; Krauklish, I. V.
 PATENT ASSIGNEE(S): Russia
 SOURCE: Russ., No pp. given
 CODEN: RUXXE7
 DOCUMENT TYPE: Patent
 LANGUAGE: Russian
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
RU 2193429	C2	20021127	RU 2000-127759	20001104
PRIORITY APPLN. INFO.:			RU 2000-127759	20001104

AB The composition has a finely divided cooling agent selected from a group of Al(OH)3, activated Al2O3, and/or activated aluminosilicate and/or their mixture with clay, or inorg. binders. The composition contains a fuel-binder 1.5-18.0, addnl. fuel 3.0-25.0, cooling agent 1.5-60.0, additives 0.5-10.0 weight%, and oxidizer balance. The addnl. fuel is selected from series including guanidine, urea, **dicyandiamide**, melon, melem, melamine, urotropin, azobisformamide, **semicarbazide**, dihydroglyoxim, tetrazole, ditetrazole, their derivs., or their salts. The oxidizer is used in the form of nitrates or perchlorates of metals or ammonia, or their mixts. The fuel-binder is used in the form of polymers, resins, and/or rubber. The additives are used in the form of metals such as Al and/or Mg, or their alloys. An oxidation-reduction catalyst 0.05-5.00 weight% is introduced into the cooling agent composition. The fire-extinguishing composition decreases and eliminates flame during fire, controls combustion temperature, and eliminates toxic gases.

IT **2783-98-4**, 5,5'-Bi-1H-tetrazole
 RL: TEM (Technical or engineered material use); USES (Uses)
 (in environmentally acceptable short-flame and flameless aerosol-forming compns. for fire extinguishing)

RN 2783-98-4 CAPLUS
 CN 5,5'-Bi-1H-tetrazole (9CI) (CA INDEX NAME)



L15 ANSWER 2 OF 16 CAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2002:843922 CAPLUS
 DOCUMENT NUMBER: 137:355060
 TITLE: Gas-generating propellants based on nitrogen-containing fuel mononitrates and nitrate salt oxidizers for inflation of vehicles airbags
 INVENTOR(S): Burns, Sean P.; Khandhadia, Paresh S.
 PATENT ASSIGNEE(S): Automotive Systems Laboratory, Inc., USA
 SOURCE: U.S., 12 pp., Cont.-in-part of U.S. 6,287,400.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 4
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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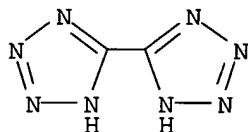
US 6475312	B1	20021105	US 2000-544694	20000407
US 6287400	B1	20010911	US 2000-516067	20000301
US 2003066584	A1	20030410	US 2002-279323	20021024
PRIORITY APPLN. INFO.:			US 1999-128101P	P 19990407
			US 1999-130660P	P 19990423
			US 2000-516067	A2 20000301
			US 1999-122234P	P 19990301
			US 2000-544694	A2 20000407

AB Gas generating propellants are formulated by: (1) chilling an amount of HNO₃ to 0-20°, (2) adding a nitrogen-containing fuel to the chilled HNO₃ to form an aqueous solution containing the corresponding mononitrate, (3) adding an oxidizer and stirring the mixture to form a wet paste wetted by HNO₃ or the water and precipitate a solid solution of the fuel mononitrate and oxidizer, (4) forming the solid solution into a paste, which is then shaped and dried. Suitable oxidizers generally are non-metal, alkali metal, and alkaline earth metal nitrates. Suitable nitrogen-containing fuels include mononitrates of 5-aminotetrazole, diaminotriazole, azodicarbonamide, hydrazodicarbonamide, **semicarbazide**, **carbohydrazide**, biuret, 3,5-diamino-1,2,4-triazole, **dicyandiamide**, and 3-amino-1,2,4-triazole. These compns. are especially suitable for inflating air bags and actuating seat belt pretensioners in passenger-restraint devices.

IT **3021-02-1P**, 5,5'-Bi-1H-tetrazole, diammonium salt
 RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (oxidizers; gas-generating propellants based on nitrogen-containing fuel mononitrates and nitrate salt oxidizers for inflation of vehicles airbags)

RN 3021-02-1 CAPLUS

CN 5,5'-Bi-1H-tetrazole, diammonium salt (9CI) (CA INDEX NAME)



● 2 NH₃

REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 3 OF 16 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2001:900130 CAPLUS

DOCUMENT NUMBER: 136:20077

TITLE: Process for the preparation of highly pure 5,5'-bi-1H-tetrazole diammonium salts

INVENTOR(S): Hyoda, Shunji; Kita, Masaharu; Sugino, Atsushi; Nemugaki, Shuichi; Ueta, Takahiro; Sato, Koki

PATENT ASSIGNEE(S): Japan Hydrazine Co., Ltd., Japan; Masuda Chemical Industry Co., Ltd.

SOURCE: Eur. Pat. Appl., 27 pp.
 CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1162198	A1	20011212	EP 2001-304892	20010605
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2001348377	A2	20011218	JP 2000-168213	20000605
US 2002058820	A1	20020516	US 2001-871946	20010604
US 6433181	B1	20020813		

PRIORITY APPLN. INFO.: JP 2000-168213 A 20000605

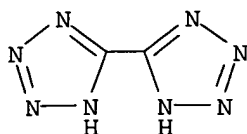
OTHER SOURCE(S): CASREACT 136:20077

AB A process is described for the preparation of a highly pure 5,5'-bi-1H-tetrazole diammonium salt (BHT·2NH₃) in a high yield by efficiently synthesizing the 5,5'-bi-1H-tetrazole diammonium salt (BHT·2NH₃) from cheap and easy-to-handle starting materials based on a one-pot reaction, and removing copper components which are impurities in the form of a copper·ammonia·5,5'-bi-1H-tetrazole complex from the reaction solution or from the coarse crystals isolated from the reaction solution. By further conducting the treatment with a chelating resin, the copper content can be further decreased. The refining process is conducted by either: (A) adding small amts. of aqueous hydrogen peroxide and ammonia water to the reaction solution containing the 5,5'-bi-1H-tetrazole disodium salt that is obtained by synthesizing a **dicyan** by adding, as an oxidizing agent, aqueous hydrogen peroxide to an aqueous solution of the starting materials of which the pH has been adjusted to be 5 to 7 by the addition of a small amount of acidic substance in the presence of hydrogen cyanide or sodium cyanide, sodium **azide** and a catalytic amount of a copper salt, followed by the heat-cyclization reaction, and removing by filtration the insol. component of the precipitated copper·ammonia·5,5'-bi-1H-tetrazole complex, and reacting the reaction solution with an aqueous solution of ammonium chloride, or (B) adding the aqueous solution of ammonium chloride to the reaction solution, transforming the separated 5,5'-bi-1H-tetrazole diammonium salt (BHT·2NH₃) into a 5,5'-bi-1H-tetrazole disodium salt (BHT·2Na), dissolving the disodium salt again, and reacting the aqueous solution of the obtained 5,5'-bi-1H-tetrazole disodium salt from which the insol. component of the formed copper·ammonia·5,5'-bi-1H-tetrazole complex has been removed by filtration with the aqueous solution of ammonium chloride. The process of preparing the highly pure 5,5'-bi-1H-tetrazole diammonium salt (BHT·2NH₃) combines the refining process (A) or (B) with a step of treatment with a chelating resin to react the treated solution with ammonium chloride or an aqueous solution thereof to recover the formed highly pure ammonium salt in the form of crystals.

IT **3021-02-1P**, 5,5'-Bi-1H-tetrazole diammonium salt
 RL: IMF (Industrial manufacture); PUR (Purification or recovery); SPN (Synthetic preparation); PREP (Preparation)
 (process for the preparation of highly pure 5,5'-bi-1H-tetrazole diammonium salt)

RN **3021-02-1** CAPLUS

CN 5,5'-Bi-1H-tetrazole, diammonium salt (9CI) (CA INDEX NAME)



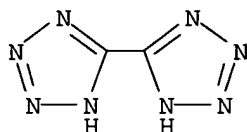
● 2 NH₃

IT 66012-81-5P

RL: IMF (Industrial manufacture); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(process for the preparation of highly pure 5,5'-bi-1H-tetrazole diammonium salt)

RN 66012-81-5 CAPLUS

CN 5,5'-Bi-1H-tetrazole, disodium salt (9CI) (CA INDEX NAME)



● 2 Na

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 4 OF 16 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2001:770988 CAPLUS

DOCUMENT NUMBER: 135:320147

TITLE: Thermally stable gas-generating **nonazide**-based compositions for inflation of vehicle airbags

INVENTOR(S): Khandhadia, Paresh S.; Burns, Sean P.

PATENT ASSIGNEE(S): Automotive Systems Laboratory, Inc., USA

SOURCE: U.S., 10 pp., Cont.-in-part of U.S. Ser. No. 681,662, abandoned.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6306232	B1	20011023	US 1997-851503	19970505
CA 2260144	AA	19980205	CA 1997-2260144	19970710
WO 9804507	A1	19980205	WO 1997-US12579	19970710
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9738038	A1	19980220	AU 1997-38038	19970710

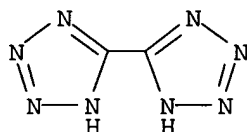
EP 915813	A1	19990519	EP 1997-934999	19970710
R: DE, FR, GB				
CN 1228752	A	19990915	CN 1997-196919	19970710
JP 2002511828	T2	20020416	JP 1998-508888	19970710
PRIORITY APPLN. INFO.:			US 1996-681662	B2 19960729
			US 1997-851503	A 19970505
			WO 1997-US12579	W 19970710

AB Thermally stable gas-generating compns., especially for inflation of vehicle airbags, consist of **nonazide**-based mixture containing: (1) nitroguanidine, (2) at least one **nonazide** high-nitrogen fuel selected from guanidines, tetrazoles and triazoles, and salts of tetrazoles and triazoles, and (3) potassium nitrate-stabilized ammonium nitrate. The composition has a m.p. of >115°, nitroguanidine 1-26, **nonazide** nitrogen fuel 4-40, and phase-stabilized ammonium nitrate 40-85 weight%. In addition, the composition can contain a burn rate modifier (e.g.,

alkali and alkaline earth metal salts of nitric acid, nitrous acid, **dicyandiamide**, and borohydrides) and a slag former-coolant selected from clays, silica, glass, and alumina. The compns. have a reduced yield of solid combustion products, acceptable burn rates, thermal stability, and ballistic properties.

IT **2783-98-4**, 5,5'-Bitetrazole **2783-98-4D**, 5,5'-Bitetrazole, salts **3021-02-1**, 5,5'-Bi-1H-tetrazole, diammonium salt **137855-82-4**, Hydrazinecarboximidamide, compound with 5,5'-bi-1H-tetrazole (1:1) **137855-83-5**, Guanidine, compound with 5,5'-bi-1H-tetrazole (1:1) **157280-45-0**, 5,5'-Bi-1H-tetrazole, compound with hydrazine (1:1) **157280-51-8**, 1H-1,2,4-Triazol-3-amine, compound with 5,5'-bi-1H-tetrazole (1:1) **180466-59-5**, Guanidine, compound with 5,5'-bi-1H-tetrazole (2:1) **207306-11-4**, Hydrazinecarboximidamide, compound with 5,5'-bi-1H-tetrazole (2:1) **207306-12-5**, 5,5'-Bi-1H-tetrazole, compound with hydrazine (1:2) **207306-14-7**, 1H-1,2,4-Triazol-3-amine, compound with 5,5'-bi-1H-tetrazole (2:1) **240822-34-8**, 5,5'-Bi-1H-tetrazole, monoammonium salt
 RL: TEM (Technical or engineered material use); USES (Uses)
 (propellants containing; thermally stable gas-generating **nonazide**-based compns. for inflation of vehicle airbags)

RN 2783-98-4 CAPLUS
 CN 5,5'-Bi-1H-tetrazole (9CI) (CA INDEX NAME)



L15 ANSWER 5 OF 16 CAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2001:709736 CAPLUS
 DOCUMENT NUMBER: 135:259361
 TITLE: Preparation of 5,5'-bi-1H-tetrazole diammonium salts from hydrazine hydrate and **dicyan** useful as gas generating agents for airbags
 INVENTOR(S): Hyoda, Shunji; Kita, Masaharu; Sawada, Hirotoshi; Nemugaki, Shuichi; Ueta, Takahiro; Satoh, Kohki
 PATENT ASSIGNEE(S): Japan Hydrazine Co., Ltd., Japan; Masuda Chemical Industry Co., Ltd.
 SOURCE: Eur. Pat. Appl., 20 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1136476	A2	20010926	EP 2001-302734	20010323
EP 1136476	A3	20011114		
EP 1136476	B1	20040630		

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO

JP 2001270868	A2	20011002	JP 2000-83714	20000324
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US 2001029301	A1	20011011	US 2001-813826	20010322
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PRIORITY APPLN. INFO.:			JP 2000-83714	A 20000324
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AB 5,5'-Bi-1H-tetrazole diammonium salts are prepared by reaction of oxalimidic acid **dihydrazide** with sodium nitrite in presence of an acidic substance at a pH = 4-6 forming 5,5'-bi-1H-tetrazole which is subsequently converted into the 5,5'-bi-1H-tetrazole disodium salt by addition of sodium hydroxide and then into the ammonium salt by reaction with an ammonium chloride solution. The acidic compound has a pKa of 3 - 5 and is added that the molar ratio of the acidic compound to the oxalimidic acid **dihydrazide** is from 2.0 to 4.0. An aqueous solution of sodium nitrite is added dropwise at -10-30 °C forming the **azide**, and a cyclization reaction is conducted at 10-70 °C for 1-7 h. The reaction to form the 5,5'-bi-1H-tetrazole disodium salt is conducted at 20-90 °C for 1-5 h preceded by the addition of an aqueous solution of sodium hydroxide in a molar ratio of NaOH to the oxalimidic acid **dihydrazide** of 2.0-3.5. The reaction to form the ammonium salt is conducted at 50-90 °C for 1-3 h after addition of the ammonium chloride to the aqueous solution in a molar ratio of NH4Cl to the oxalimidic acid

dihydrazide of 2.0-3.5. Oxalimidic acid **dihydrazide** is synthesized by reaction of **dicyan** and hydrazine hydrate in a polar solvent at -10 - 50 °C for 2-30 h. using a molar ratio of hydrazine hydrate to **dicyan** of 2.5-3.5 yielding a crystalline product. 5,5'-Bi-1H-tetrazole diammonium salts are lowly toxic and useful as gas generating agents for airbags and as high-mol. foaming agents.

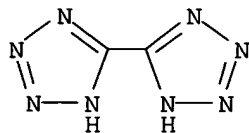
IT **2783-98-4P**, 5,5'-Bi-1H-tetrazole **66012-81-5P**,
5,5'-Bi-1H-tetrazole disodium salt

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(intermediate; preparation of 5,5'-bi-1H-tetrazole diammonium salts from hydrazine hydrate and **dicyan** useful as gas generating agents for airbags)

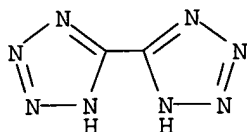
RN 2783-98-4 CAPLUS

CN 5,5'-Bi-1H-tetrazole (9CI) (CA INDEX NAME)



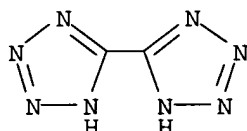
RN 66012-81-5 CAPLUS

CN 5,5'-Bi-1H-tetrazole, disodium salt (9CI) (CA INDEX NAME)



●2 Na

IT 3021-02-1P, 5,5'-Bi-1H-tetrazole diammonium salt
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation of 5,5'-bi-1H-tetrazole diammonium salts from hydrazine hydrate
 and dicyan useful as gas generating agents for airbags)
 RN 3021-02-1 CAPLUS
 CN 5,5'-Bi-1H-tetrazole, diammonium salt (9CI) (CA INDEX NAME)



●2 NH₃

L15 ANSWER 6 OF 16 CAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2000:911198 CAPLUS
 DOCUMENT NUMBER: 134:58755
 TITLE: Gas-generating agent composition for airbags
 INVENTOR(S): Yamato, Yo; Osawa, Hideya
 PATENT ASSIGNEE(S): Daicel Chemical Industries, Ltd., Japan
 SOURCE: PCT Int. Appl., 27 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

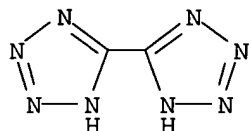
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000078696	A1	20001228	WO 2000-JP3961	20000616
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
JP 2001002488	A2	20010109	JP 1999-170610	19990617
EP 1205459	A1	20020515	EP 2000-937286	20000616
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL				
US 6682616	B1	20040127	US 2001-959621	20011101
PRIORITY APPLN. INFO.:				
			JP 1999-170610	A 19990617
			WO 2000-JP3961	W 20000616

AB A gas-generating agent composition for airbags comprises, as main components, a heat-resistant binder and an oxidizing agent, and optionally a neutralizing agent for chlorine. The composition has high-heat resistance and is easy to produce and, when used, produce less amount of CO and chlorine-containing gases. The heat-resistant gas-generating agent can be used in airbags.

IT **2783-98-4D**, 5,5'-Bitetrazole, derivs.
 RL: MOA (Modifier or additive use); USES (Uses)
 (gas-generating agent composition for airbags containing)

RN 2783-98-4 CAPLUS

CN 5,5'-Bi-1H-tetrazole (9CI) (CA INDEX NAME)



REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 7 OF 16 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2000:645668 CAPLUS

DOCUMENT NUMBER: 133:225201

TITLE: Two-step method for manufacture of
 5,5'-bi-(1H-tetrazole) diammonium salt as inflating
 composition for vehicle airbags

INVENTOR(S): Hyoda, Shunji; Kita, Masaharu; Sawada, Hirotooshi;
 Nemugaki, Shuichi; Otsuka, Sumio; Miyawaki, Yoshitaka;
 Ogawa, Takashi; Kubo, Yuhki

PATENT ASSIGNEE(S): Japan Hydrazine Co., Ltd., Japan; Masuda Chemical
 Industry Co., Ltd.

SOURCE: Eur. Pat. Appl., 9 pp.
 CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1035118	A1	20000913	EP 1999-306842	19990827
EP 1035118	B1	20021023		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2000256332	A2	20000919	JP 1999-65453	19990311
PRIORITY APPLN. INFO.:			JP 1999-65453	A 19990311

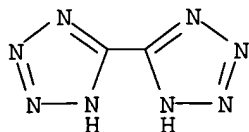
AB A two-step process for the preparation of 5,5'-bi-1H-tetrazole diammonium salt (I), in >90% yield, is described from **dicyan**, sodium **azide** (NaN₃), ammonium chloride (NH₄Cl), and water, in which the first step is carried out at 45-55° for 0.5-2 h, followed by a second step at 85-95° for 3-8 h. I, which goes through 5-cyano-1H-tetrazole intermediate, ppts. out as crystals, which are isolated by simple filtration. **Dicyan**, NaN₃, and NH₄Cl are fed at molar ratios of: (1) NaN₃-NH₄Cl 0.9-1.5:1, and (2) NaN₃-(CN)₂ 2.0-4.0:1. I has use as a low-toxicity high-energy component for gas generators for airbag inflation.

IT **2783-98-4P**, 5,5'-Bi(1H-tetrazole)

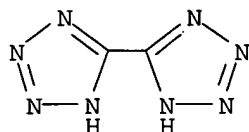
RL: IMF (Industrial manufacture); PREP (Preparation)

(two-step method for manufacture of 5,5'-bi-(1H-tetrazole) diammonium salt as inflating composition for vehicle airbags)

RN 2783-98-4 CAPLUS
CN 5,5'-Bi-1H-tetrazole (9CI) (CA INDEX NAME)



IT 3021-02-1P, 5,5'-Bi(1H-tetrazole) diammonium salt
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(two-step method for manufacture of 5,5'-bi-(1H-tetrazole) diammonium salt as inflating composition for vehicle airbags)
RN 3021-02-1 CAPLUS
CN 5,5'-Bi-1H-tetrazole, diammonium salt (9CI) (CA INDEX NAME)



● 2 NH₃

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 8 OF 16 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2000:180908 CAPLUS
DOCUMENT NUMBER: 132:207845
TITLE: Preparation of 5,5'-bi-1H-tetrazole diammonium salt from **dicyan**, sodium **azide**, and ammonium chloride.
INVENTOR(S): Hyoda, Shunji; Kita, Masaharu; Sawada, Hirotoshi; Nemugaki, Shuichi; Otsuka, Sumio; Miyawaki, Yoshitaka; Ogawa, Takashi; Kubo, Yuhki
PATENT ASSIGNEE(S): Japan Hydrazine Co., Inc, Japan; Masuda Chemical Industry Co., Ltd.
SOURCE: U.S., 5 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6040453	A	20000321	US 1999-374950	19990816
PRIORITY APPLN. INFO.:			US 1999-374950	19990816
OTHER SOURCE(S):		CASREACT 132:207845		

AB 5,5'-Bi-1H-tetrazole diammonium salt (I) was prepared from **dicyan**, NaN₃, and NH₄Cl in an aqueous reaction medium. Thus, gaseous **dicyan** was added to a mixture of NaN₃ and NH₄Cl in H₂O at 2-4° over 5 h followed by heating at 50° for 1 h and at 90° for 5.5 h to give 95.1% I.

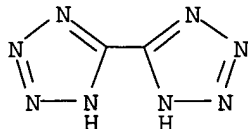
IT 3021-02-1P, 5,5'-Bi-1H-tetrazole diammonium salt

RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)

(preparation of 5,5'-bi-1H-tetrazole diammonium salt from **dicyan**, sodium **azide**, and ammonium chloride)

RN 3021-02-1 CAPLUS

CN 5,5'-Bi-1H-tetrazole, diammonium salt (9CI) (CA INDEX NAME)



●2 NH₃

REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> d 115 9-16 ibib abs hitstr

L15 ANSWER 9 OF 16 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2000:66738 CAPLUS

DOCUMENT NUMBER: 132:80527

TITLE: **Nonazide**-containing ammonium nitrate-based gas generators and propellants for inflation of automobile restraint devices

INVENTOR(S): Lundstrom, Norman H.; Scheffee, Robert S.; Luke, Daniel S.

PATENT ASSIGNEE(S): Atlantic Research Corp., USA

SOURCE: U.S., 12 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

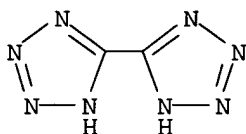
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6017404	A	20000125	US 1998-220015	19981223
US 6123790	A	20000926	US 1999-417851	19991014
CA 2356899	AA	20000706	CA 1999-2356899	19991222
WO 2000039053	A2	20000706	WO 1999-US30532	19991222
WO 2000039053	A3	20010222		
W: CA, JP, KR, MX				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 1165463	A2	20020102	EP 1999-972438	19991222
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
JP 2003529513	T2	20031007	JP 2000-590966	19991222
PRIORITY APPLN. INFO.:			US 1998-220015	A3 19981223
			WO 1999-US30532	W 19991222

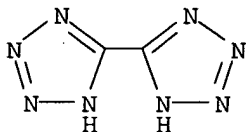
AB **Nonazide** gas generating compns., especially for use in an inflation device (i.e., a vehicle passenger restraint system), consists of the **nonazide** fuel (preferably high-bulk-d. nitroguanidine), an oxidizer (preferably phase-stabilized ammonium nitrate), and azodicarbonamide dinitrate. Other **nonazide** fuels include 5,5'-bistetrazole, 5,5'-azobistetrazole, nitroaminotriazole,

nitrotriazoles, and 3-nitro-1,2,4-triazol-5-one. The composition can also include a burn rate modifier chosen from tetrazoles and triazoles (and salts), triaminoguanidine nitrate, alkali and alkaline earth nitrates and nitrites, **dicyandiamide** (and salts), and borohydrides (and salts). The compns. can also include a combination slag-forming agent and a coolant, selected from clays, silica, glass, and alumina. The compns. are characterized by an adjustable burning rate with no catastrophic events occurring during cook-off tests.

IT 2783-98-4, 5,5'-Bi-1H-tetrazole 3021-02-1,
5,5'-Bi-1H-tetrazole, diammonium salt
RL: TEM (Technical or engineered material use); USES (Uses)
(fuel, airbag propellants containing; **nonazide**-containing ammonium
nitrate-based gas generators and propellants for inflation of
automobile restraint devices)
RN 2783-98-4 CAPLUS
CN 5,5'-Bi-1H-tetrazole (9CI) (CA INDEX NAME)



RN 3021-02-1 CAPLUS
CN 5,5'-Bi-1H-tetrazole, diammonium salt (9CI) (CA INDEX NAME)



● 2 NH₃

REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 10 OF 16 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1999:691053 CAPLUS
DOCUMENT NUMBER: 131:312223
TITLE: Method of reducing NO_x generated from gas-generating
agent for airbags
INVENTOR(S): Yamato, Yo; Yamazaki, Masayuki
PATENT ASSIGNEE(S): Daicel Chemical Industries, Ltd., Japan
SOURCE: PCT Int. Appl., 26 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

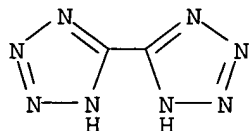
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9954270	A1	19991028	WO 1999-JP680	19990217
W: CN, JP, KR, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				

EP 997450 A1 20000503 EP 1999-905205 19990217
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, FI
 US 6651565 B1 20031125 US 1999-446313 19991220
 PRIORITY APPLN. INFO.: JP 1998-109432 A 19980420
 JP 1998-170860 A 19980618
 JP 1998-320269 A 19981111
 WO 1999-JP680 W 19990217

AB A method for reducing the amount of NOx generated by the combustion of a gas-generating agent for airbags comprises placing a reducing substance in a gas generator where the NH2 radicals generated by the decomposition of the reducing substance reacts with NOx to change part of the NOx into N2 gas.

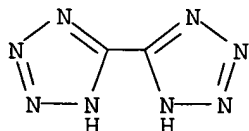
IT 3021-02-1, 5,5'-Bi-1H-tetrazole, diammonium salt
 66012-81-5, 5,5'-Bi-1H-tetrazole, disodium salt 83285-65-8
 , 5,5'-Bi-1H-tetrazole, dipotassium salt
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (reducing agent; in reducing NOx generated from gas-generating agent for airbags)

RN 3021-02-1 CAPLUS
 CN 5,5'-Bi-1H-tetrazole, diammonium salt (9CI) (CA INDEX NAME)



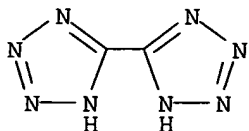
●2 NH3

RN 66012-81-5 CAPLUS
 CN 5,5'-Bi-1H-tetrazole, disodium salt (9CI) (CA INDEX NAME)



●2 Na

RN 83285-65-8 CAPLUS
 CN 5,5'-Bi-1H-tetrazole, dipotassium salt (9CI) (CA INDEX NAME)



●2 K

REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 11 OF 16 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1998:485015 CAPLUS
DOCUMENT NUMBER: 129:110991
TITLE: Gas-generating agent for airbag
INVENTOR(S): Yoshikawa, Eiichiro; Minoguchi, Ryo; Kuroiwa, Akihiko;
Kanda, Takeshi; Ikeda, Kenjiro; Iwasaki, Makoto;
Tanaka, Akihiko; Sato, Eishi; Kubo, Daiiri; Masuda,
Kaoru; Kanamaru, Moriyoshi
PATENT ASSIGNEE(S): Nippon Kayaku K. K., Japan; Kabushiki Kaisha Kobe
Seiko Sho
SOURCE: PCT Int. Appl., 45 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

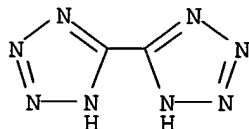
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9829361	A1	19980709	WO 1997-JP4776	19971222
W: DE, JP, KR, US				
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 952131	A1	19991027	EP 1997-949222	19971222
R: DE, FR, GB, IT, SE				
US 6416599	B1	20020709	US 1999-331839	19990628
PRIORITY APPLN. INFO.:			JP 1996-359158	A 19961228
			WO 1997-JP4776	W 19971222

AB A gas-generating agent for airbags which is characterized by comprising a fuel ingredient comprising a nitrogenous organic compound and an oxidizing agent as the main components and at least one metal nitride or metal carbide which both react with a metallic ingredient contained in the fuel ingredient or oxidizing agent to form slags. The gas-generating agent eliminates the problem concerning slag collection, which arises when a fuel based on a nitrogenous organic compound is put to practical use. It sufficiently takes advantage of the high rate of gasification of the fuel based on a nitrogenous organic compound to thereby attain a smaller gas generator size. Heat resistance and moldability of fuels have been improved, thus providing a molded gas-generating agent which is tough and has long-term stability.

IT 2783-98-4, 5,5'-Bi-1H-tetrazole
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
(in gas-generating agent for airbag)

RN 2783-98-4 CAPLUS

CN 5,5'-Bi-1H-tetrazole (9CI) (CA INDEX NAME)



REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 12 OF 16 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1998:176262 CAPLUS
DOCUMENT NUMBER: 128:232458

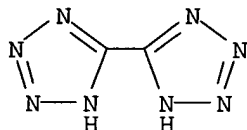
TITLE: Gas generators using ammonium nitrate for airbags
 INVENTOR(S): Minoguchi, Susumu; Yoshikawa, Eiichiro; Ito, Hiroji;
 Tanaka, Akihiko; Sato, Eishi; Iwasaki, Makoto; Kubo,
 Hiromichi
 PATENT ASSIGNEE(S): Nippon Kayaku Co., Ltd., Japan; Sensor Technology Inc.
 SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10072273	A2	19980317	JP 1996-247169	19960828
PRIORITY APPLN. INFO.:			JP 1996-247169	19960828

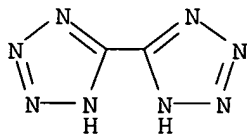
AB The generators contain NH₄NO₃ and (1) reducing agents of bitetrazole, bitetrazole metal salts, bitetrazole ammonium salt, nitroguanidine, guanidine nitrate, **dicyandiamide**, azodicarbonamide, and/or **carbohydrazide** or (2) (a) reducing agents of the above agents in 1 and/or tetrazole, aminotetrazole, and/or triaminoguanidine nitrate salt and (b) combustion regulators of Cu oxide, MnO₂, and/or KMnO₄. Although ammonium nitrate itself has low reactivity and combustibility, the N-containing reducing agents allow stable combustion and complete decomposition of ammonium nitrate without generating harmful CO.

IT **2783-98-4**, 5,5'-Bi-1H-tetrazole **3021-02-1**
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (reducing agents; airbag gas generators using ammonium nitrate, reducing agents, and optionally combustion regulators)

RN 2783-98-4 CAPLUS
 CN 5,5'-Bi-1H-tetrazole (9CI) (CA INDEX NAME)



RN 3021-02-1 CAPLUS
 CN 5,5'-Bi-1H-tetrazole, diammonium salt (9CI) (CA INDEX NAME)



●2 NH₃

L15 ANSWER 13 OF 16 CAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1998:102831 CAPLUS
 DOCUMENT NUMBER: 128:169429
 TITLE: Thermally stable **nonazide** propellants for automotive airbag inflation

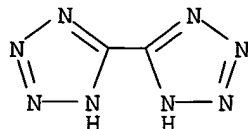
INVENTOR(S): Khandhadia, Paresh S.; Burns, Sean P.
 PATENT ASSIGNEE(S): Automotive Systems Laboratory, Inc., USA
 SOURCE: PCT Int. Appl., 36 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9804507	A1	19980205	WO 1997-US12579	19970710
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
US 6306232	B1	20011023	US 1997-851503	19970505
AU 9738038	A1	19980220	AU 1997-38038	19970710
EP 915813	A1	19990519	EP 1997-934999	19970710
R: DE, FR, GB				
JP 2002511828	T2	20020416	JP 1998-508888	19970710
PRIORITY APPLN. INFO.:			US 1996-681662	A 19960729
			US 1997-851503	A 19970505
			WO 1997-US12579	W 19970710

AB Thermally stable gas-generating agent compns. incorporate a combination of nitroguanidine, one or more **nonazide** high-nitrogen fuels, and phase-stabilized ammonium nitrate or a similar nonmetallic oxidizer that, upon combustion, result in a greater yield of gaseous products per mass unit of gas-generating agent, a reduced yield of solid combustion products, and acceptable burn rates, thermal stability, and ballistic properties. These compns. are especially suitable for inflating airbags in passenger-restraint devices.

IT **2783-98-4**, 5,5'-Bitetrazole
 RL: TEM (Technical or engineered material use); USES (Uses)
 (in thermally stable **nonazide** propellants for automotive airbag inflation)

RN 2783-98-4 CAPLUS
 CN 5,5'-Bi-1H-tetrazole (9CI) (CA INDEX NAME)



REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 14 OF 16 CAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1997:496828 CAPLUS
 DOCUMENT NUMBER: 127:97211
 TITLE: Gas-generating agent and transfer charge for use in airbag gas generator
 INVENTOR(S): Kanda, Takeshi; Yokote, Nobuaki; Saso, Takashi; Tanaka, Koji; Kuroiwa, Akihiko; Ito, Yuji; Kimura, Ayumu
 PATENT ASSIGNEE(S): Sensor Technology Co., Ltd., Japan; Nippon Kayaku

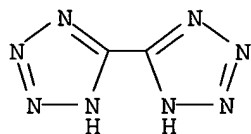
SOURCE: Kabushiki-Kaisha
PCT Int. Appl., 41 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9720786	A1	19970612	WO 1996-JP3493	19961129
W: DE, GB, JP, KR, US				
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 864553	A1	19980916	EP 1996-939324	19961129
R: DE, FR, GB				
US 6177028	B1	20010123	US 1998-77299	19980601
PRIORITY APPLN. INFO.:			JP 1995-337944	A 19951201
			JP 1996-277066	A 19960926
			WO 1996-JP3493	W 19961129

AB A gas-generating agent and/or a transfer charge possesses auto-ignitability and comprises a fuel component, an oxidizing agent, and a combustion modifier. The fuel component comprises at least one member selected from the group consisting of azodicarbonamide, **carbohydrazide, dicyanidiamide**, aminotetrazole, aminoguanidine, triaminoguanidine nitrate, nitroguanidine, triazole, tetrazole, azobitetrazole, bitetrazole, and their salts. The oxidizing agent has ≥ 50 weight% salt of nitric acid, and the combustion modifier comprises at least one substance selected from (1) at least one member selected from zirconium, hafnium, molybdenum, tungsten, manganese, nickel, iron, and oxides and sulfides of the above elements; (2) at least one member selected from carbon, sulfur, and phosphorus; and (3) a mixture of the above members (1) and (2).

IT **2783-98-4**, 5,5'-Bi-1H-tetrazole
RL: TEM (Technical or engineered material use); USES (Uses)
(gas-generating agent and transfer charge for use in airbag gas generator)

RN 2783-98-4 CAPLUS
CN 5,5'-Bi-1H-tetrazole (9CI) (CA INDEX NAME)



L15 ANSWER 15 OF 16 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1996:599019 CAPLUS
DOCUMENT NUMBER: 125:225967
TITLE: Gas-generating mixture for airbags
INVENTOR(S): Redecker, Klaus; Weuter, Waldemar; Bley, Ulrich
PATENT ASSIGNEE(S): Dynamit Nobel Ag, Germany
SOURCE: Ger. Offen., 10 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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DE 19505568	A1	19960822	DE 1995-19505568	19950218
CA 2211579	AA	19960829	CA 1996-2211579	19960213
WO 9626169	A1	19960829	WO 1996-EP605	19960213
W: BR, CA, CN, CZ, JP, KR, MX, PL, RU, TR, US, VN				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 809616	A1	19971203	EP 1996-902269	19960213
R: AT, DE, ES, FR, GB, IT, SE				
CN 1183758	A	19980603	CN 1996-193147	19960213
BR 9607444	A	19980630	BR 1996-7444	19960213
JP 11500098	T2	19990106	JP 1996-525361	19960213
PL 183318	B1	20020628	PL 1996-321832	19960213
PRIORITY APPLN. INFO.:			DE 1995-19505568	A 19950218
			WO 1996-EP605	W 19960213

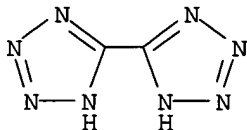
OTHER SOURCE(S): MARPAT 125:225967

AB A propellant for gas generators consists of (1) a N-containing compound from a group of tetrazole, triazole, triazine, HCN, urea, their derivs. or salts as a fuel, (2) ≥ 3 compds. from a group of peroxides, nitrates, chlorates, or perchlorates as an oxidation agent, (3) combustion moderators which affect combustion and combustion rate by heterogeneous or homogeneous catalysis, and optionally (4) additives decreasing the amount of toxic gases. The mixts. do not generate toxic products during combustion in airbags.

IT **2783-98-4**, 5,5'-Bitetrazole
 RL: NUU (Other use, unclassified); USES (Uses)
 (in gas generator for automobile airbags)

RN 2783-98-4 CAPLUS

CN 5,5'-Bi-1H-tetrazole (9CI) (CA INDEX NAME)



L15 ANSWER 16 OF 16 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1996:524278 CAPLUS

DOCUMENT NUMBER: 125:172649

TITLE: Gas-generating compositions using **dicyanamide** salts as fuel

INVENTOR(S): Barnes, Michael W.; Deppert, Thomas M.; Taylor, Robert D.

PATENT ASSIGNEE(S): Morton International, Inc., USA

SOURCE: U.S., 4 pp., Cont.-in-part of U.S. Ser. No. 165,771.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 5544687	A	19960813	US 1994-182478	19940114
AU 9475957	A1	19950803	AU 1994-75957	19941020
AU 668660	B2	19960509		
CA 2134187	AA	19950611	CA 1994-2134187	19941024
EP 661253	A2	19950705	EP 1994-308331	19941111
EP 661253	A3	19950913		
R: BE, DE, ES, FR, GB, IT, NL, SE				
JP 07206570	A2	19950808	JP 1994-307341	19941212
JP 2698553	B2	19980119		

PRIORITY APPLN. INFO.:

US 1993-165771

A2 19931210

US 1994-182478

A 19940114

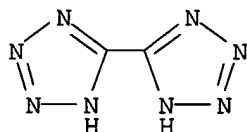
AB The compns. comprise approx. 10-60 weight% fuel, .gtorsim.25-100 weight% of which consist of ≥ 1 transition metal salts of **dicyanamide** and balance other fuel, and balance ≥ 1 oxidizers selected from NH_4 , alkali metal, and alkaline earth chlorates, perchlorates, and nitrates. The preferred transition metal salts of **dicyanamide** are Zn **dicyanamide** and Cu **dicyanamide**. These non-**azide** propellants are especially suitable for use in automotive air bag restraint systems. A composition containing Cu **dicyanamide** 26.77, guanidine nitrate 10, Li_2CO_3 10, and $\text{Sr}(\text{NO}_3)_2$ 53.23 weight% had burn rate @ 1000 psi 0.75 in./s and gave 1.70 mol/100 g.

IT **2783-98-4D**, 5,5'-Bi-1H-tetrazole, salts

RL: TEM (Technical or engineered material use); USES (Uses)
(fuel; **dicyanamide** salts as fuel in propellant compns. for
airbags)

RN 2783-98-4 CAPLUS

CN 5,5'-Bi-1H-tetrazole (9CI) (CA INDEX NAME)



Day : Saturday
Date: 3/19/2005

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 **PALM INTRANET****Inventor Name Search Result**

Your Search was:

Last Name = HYODA

First Name = SHUNJI

Application#	Patent#	Status	Date Filed	Title	Inventor Name
08622082	5618978	150	03/26/1996	METHOD OF PRODUCING CHOLINE OF A HIGH PURITY	HYODA, SHUNJI
08747002	5731465	150	11/07/1996	PROCESS FOR THE PREPARATION OF TERTIARY BUTYL HYDRAZINE HYDROHALOGENIDE	HYODA, SHUNJI
08998168	5977360	150	12/24/1997	PROCESS FOR PRODUCING CYCLIC HYDRAZINE DERIVATIVES, TETRA-HYDROPYRIDAZINE AND HEXAHYDROPYRIDAZINE	HYODA, SHUNJI
09337607	6194577	150	06/21/1999	PROCESS FOR PRODUCING ALICYCLIC HYDRAZINE DERIVATIVES, TETRA-HYDROPYRIDAZINE AND HEXAHYDROPYRIDAZINE	HYODA, SHUNJI
09374949	6156906	150	08/16/1999	PROCESS FOR THE PREPARATION OF 5,5' -BI-1H-TETRAZOLE SALT	HYODA, SHUNJI
09374950	6040453	150	08/16/1999	METHOD FOR PREPARING 5,5'-BI-1H-TETRAZOLE SALT	HYODA, SHUNJI
09813826	Not Issued	071	03/22/2001	PROCESS FOR THE PREPARATION OF 5, 5'-BI-1H-TETRAZOLEDIAMMONIUM SALTS USING HYDRAZINE HYDRATE AND DICYAN AS STARTING MATERIALS	HYODA, SHUNJI
09871946	6433181	150	06/04/2001	PROCESS FOR THE PREPARATION OF HIGHLY PURE 5,5' -BI-1H-TETRAZOLEDIAMMONIUM SALTS	HYODA, SHUNJI

Inventor Search Completed: No Records to Display.

	Last Name	First Name	
Search Another: Inventor	<input type="text" value="hyoda"/>	<input type="text" value="shunji"/>	<input type="button" value="Search"/>

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